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February 23, 1952

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE

Luminous Nebula

See Page 115

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VOL. 61 NO. 8 PAGES 113-128

RADIO

TV Interference Fought

Local "task forces" seek causes of television interference. Scheme goes into operation when streaking or other bad reception reported.

➤ INTERFERENCE THAT may streak up the television screen is being fought by local "task forces" composed of TV set distributors, TV servicemen, radio amateurs and Federal Communications Commission experts.

Some of the television interference is admittedly due to the emission by amateur transmitters of harmonic and other spurious frequencies. But much of the TVI, as interference is called, is due to the TV sets themselves, which are not selective enough and let through amateur signals of proper quality. FM sets have similar troubles. And some TV sets do not do well because they are too close to transmitting and receiving stations.

The radio amateurs, banded together by the American Radio Relay League, were occupying the high frequency or short wave areas of the radio spectrum long before TV. Formerly the amateur stations were working on communication bands higher in frequency than the broadcast bands. Then TV came along and the amateurs found themselves using frequencies mostly lower than the TV sets of their neighbors.

The amateurs wish to prevent interference by proper and careful operation and it is the duty of the government's radio monitoring staffs in the FCC to see that all use the radiowaves effectively.

The FCC has obtained the cooperation of the TV set manufacturers in installing high-pass filters or modifying existing sets when it is found that interference is caused by deficiency in the TV receiver. This is being done without cost. Both the FCC and the ARRL have helped organize community interference committees which will treat as "doctors" individual cases of reported interference.

A person receiving interference sets the scheme in operation by reporting it. Then the committee of experts gets on the job and gets a solution.

Manufacturers are building their sets to prevent them from taking in signals that they should not receive. And amateurs are regulating their transmitters so that they stay on the band.

Dallas, Texas, and Dayton, Ohio, have made good starts on the interference problem. George S. Turner as FCC chief of field engineering and monitoring is the key person in the government's cooperation.

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GENERAL SCIENCE

ACLS Opposes Conant

➤ THE AMERICAN Council of Learned Societies—made up of 24 scholarly organizations—has taken issue with Harvard President Dr. James B. Conant and the Educational Policies Commission of the National Education Association over draft deferment policies.

The ACLS said that Dr. Conant's statement, "Education and National Security," issued recently, showed a confusion between two elements of the problem which could easily lead toward accepting procedures of draft deferment that would prevent what Dr. Conant and his commission wanted to accomplish.

Pointing out that the Educational Policies Commission had stressed the need for strengthening the schools in the fields of history and geography of other lands, their economy, their art and literature, languages other than our own, the ACLS declared that the deferment policies proposed would defeat this purpose.

The questions asked and the alternative policies proposed by Dr. Conant and the Commission, the ACLS asserted, might well leave control of deferments in the hands of the military and produce a policy of deferring students for study of only those subjects considered immediately useful by the military.

The ACLS saw little difference between selection and deferment as operated at present by local draft boards and as they would be operated by the Commission's proposed National Special Manpower Board. It saw danger, however, in changing from the present system of draft deferment for students who demonstrate an ability to complete college education no matter what field of study they pursue.

"The experience of World War II," the ACLS declared, "shows that no man or group of men can foresee which fields of inquiry will be vital to national security in time of war and which will not. Our safety lies more in cultivating all fields of inquiry."

The ACLS concluded that the proposals of Dr. Conant and the Educational Policies Commission ignore "the wide variety of functions which education must perform if it is completely to serve the safety of the nation."

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GEOLOGY

Samples of Arctic Frozen Ground Help Defense

➤ PAPER THIN sections of permanently frozen ground from the Permafrost area of Alaska are helping to give military men and others a better idea of how to build airfields and roads in the far North.

These paper-thin sections of frozen land were studied for over a year at Point Barrow, Alaska, in a walk-in ice box that was his laboratory experiment room, Robert F. Black of the U. S. Geological Survey reports. He told members of the Geological Society of Washington that the same stresses of the earth that have twisted and turned certain kinds of rocks, known as metamorphic, could be found in the ice crystals.

Mr. Black drilled many feet down in ice to bring up the cores from which he cut the thin sections he studied. Sections from many hundreds of ice wedges of all sizes were examined. When placed in a microscope between Nicol or polaroid prisms, the structure of the ice shows up as multicolored bands that can be photographed and analyzed.

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ENTOMOLOGY

Virus Sprays Provide Insect Control Method

➤ HERE IS a new twist on biological control by which scientists use "bugs to kill bugs."

Sprays, made from the remains of diseased insects that have succumbed to a virus, are proving to be a revolutionary method of controlling alfalfa caterpillars in California.

In field tests last year Clarence G. Thompson, of the division of biological control in the University of California's College of Agriculture, Berkeley, got almost 100% control with the new virus sprays.

Deadly to the alfalfa caterpillars, the virus is harmless to man, animals, and beneficial insects.

The virus dissolves the insides of the caterpillars. The resulting liquid is teeming with virus particles. Dying caterpillars, collected in alfalfa fields during the summer, are used to make more virus sprays.

Only one pint of the diseased caterpillars, when mixed with water, will furnish enough virus to treat 100 acres of alfalfa. The material can be sprayed from airplanes.

Since there are several generations of caterpillars a year, more than one application may be necessary. The younger the caterpillars are sprayed, the better.

Science News Letter, February 23, 1952

On This Week's Cover

➤ THE ETA Carinae Nebula, shown on the cover of this week's SCIENCE NEWS LETTER, is a top contender for the most beautiful celestial object in the southern hemisphere. The cover photograph was taken with the ADH telescope. (See below).

This nebula is a large cloud of gas which shines in the fluorescence produced by the ultraviolet light of nearby, very hot stars. Overlying the Eta Carinae bright nebulosity is a considerable amount of dark matter, which produces the irregular dark spot seen in the photograph.

The region of the Eta Carinae Nebula marks in all probability the direction of the strongest nearby local concentration of highly luminous stars and gas in our galactic system, that is, it marks the direction towards the most likely candidate for a "spiral knot" in our galaxy.

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VETERINARY MEDICINE

Same Virus Gave Cancer To Chickens, Ducks, Pigeons

➤ PIGEONS AS well as chickens and ducks can get cancer from virus injections. The same virus causes the disease in all three species, though pigeons are not affected by the chicken virus until it has been adapted to ducks.

This finding, that a single virus can cause cancer in three different animal species, shows that the cancer virus behaves in this respect like many other viruses causing ordinary diseases.

The experiments leading to the finding are reported by Dr. Paulo R. F. Borges of the Jackson Memorial Laboratory, Bar Harbor, Me., and Dr. F. Duran-Reynals of Yale University Medical School, New Haven, in the scientific journal, CANCER RESEARCH (Feb.).

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INVENTION

Two-Faced Doll Invented—It's Toy

➤ WHEN YOU speak of a two-faced doll in the future, you had better be careful. You may be speaking of the doll your little daughter loves.

A two-faced, even a three-faced, doll has been invented. Hans Goerditz, New City, N. Y., received patent 2,584,798 for what he calls a "multiple-faced" doll. The face portion of the head revolves one-third of a circle to bring each of the three faces out from under the hair. The other two faces remain hidden.

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ASTRONOMY

Naked-Eye Comet Coming

Comet Pons-Brooks, last seen some 70 years ago, expected to be spotted shortly. At its closest approach to solar system, it will be visible to the naked eye.

➤ A BRIGHT comet is heading toward the solar system. You will probably be able to see it with your unaided eye when it swings close to the sun. But for months before and after its nearest approach to the sun, the comet can probably be spotted with binoculars or small telescopes as it speeds across the heavens.

Comet Pons-Brooks will probably become as bright as fifth magnitude, easily seen with the naked eye, calculates Dr. Paul Herget, director of the Cincinnati Observatory. Last seen some 70 years ago, this comet will make its closest approach to the sun on May 27, 1954, Dr. Herget has just reported to Harvard College Observatory, clearing house for astronomical information in the western hemisphere.

During its last approach to the sun, Comet Pons-Brooks could be seen with the naked eye for about three months. Reaching maximum during the winter of 1883-84, some observers estimated it as bright as fourth magnitude.

Look for the comet to be spotted in the northern constellations of Hercules or Lyra, the lyre, within the next few months by some powerful telescope. At present the comet is about 19th magnitude, but by June it will have brightened to 18th magnitude.

This bright comet was first found in 1812 by Jean Louis Pons, Frenchman who holds the all-time record for finding comets. He discovered 27 comets during his lifetime. When this comet returned in 1883, it was located by W. R. Brooks, another famous comet-finder. So today the comet bears a double name in honor of its discoverers.

There are no photographs of the comet as even on its latest visit to the sun astronomical photography was in its infancy.

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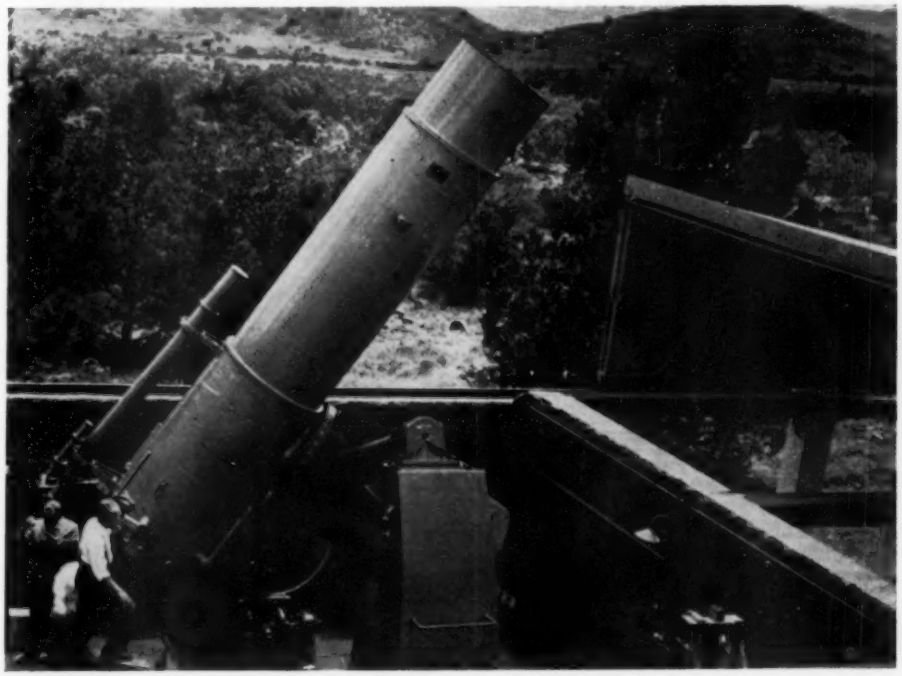

INTERNATIONAL EYE—This 36-inch Baker-Schmidt type telescope takes round plates and is designed to give perfect images over the entire field covered, about 20 square degrees. Located near Bloemfontein, South Africa, the telescope is owned jointly by the Armagh Observatory in Northern Ireland, the Dunsink Observatory in Eire and the Harvard College Observatory in Cambridge, Mass. Its 33-inch objective prism, giving spectra of the stars to about 13 magnitude, is the largest in existence (see cover, SNL, Aug. 18, 1951). The photograph on the cover was taken with this telescope.

NAVIGATION

Rival Air Location Methods

➤ TWO OPPOSING methods of letting a pilot know where he is in the air and giving him a course to follow will be presented at the European Mediterranean regional meeting of the International Civil Aviation Organization in Paris, beginning Feb. 26.

The United States is the chief proponent for one system—the Omnirange. Britain is the champion of the other—the Decca. Omnirange has already been approved by ICAO, but the British think that Decca is an improvement.

Omnirange uses very high frequency radio signals, transmitted from stations not more than 90 miles apart. Decca uses low frequency radio signals and its stations can be farther apart. Omnirange requires that the plane be on a "line of sight" from the station, while Decca signals can curve around the earth.

There are already more than 300 Omnirange stations in this country. Decca stations now almost completely cover Europe.

Decca is acknowledged to be more accurate than Omnirange. However, American experts say, Omnirange, being very high frequency, is almost 100% weatherproof while Decca is subject to static from thunderstorms and other atmospheric conditions.

Extreme accuracy, American representatives say, is not so important until the plane comes close to the airfield. Then, it is pointed out, other means of bringing in a plane are available.

Omnirange information appears on the pilot's instrument panel in the form of two needles. The British have developed the Decca Flight Log which consists of a strip map and stylus. The course of the plane is drawn by the stylus on the map.

This flight log is being installed on the jet airliner, the Comet, which will go into service this spring between London and Cairo.

U. S. experts are working on similar devices to translate the information provided by the radio signal to the pilot, but none has yet reached the operational stage. The strip map and stylus method can be adapted for use with both systems.

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TECHNOLOGY

Ceramics in Jet Research

➤ RECENT EXPERIMENTATION with metals, metal-ceramics and ceramics seems to indicate that man is licking some of the problems associated with high-temperature jet engines, rocket motors and gas turbines.

Scientists already have discovered that molybdenum—encased in another metal such as nickel—can resist temperatures up to 2,000 degrees Fahrenheit, which is 400 degrees higher than temperatures existing in present-day jet engines.

Individual programs of research already are underway. Dr. Clyde Williams, director of the Battelle Institute, Columbus, Ohio, explained how melting points and characteristics of carbon, silicon and metal-ceramic mixtures were being studied with an eye toward high-temperature engines.

Titanium, having a melting point of 3,137 degrees Fahrenheit, although of a lower melting point than molybdenum (4,760 degrees) probably will be preferred to molybdenum where strength is not too important or where the joint properties of lightness and strength are required. Aluminum, which is used by airplane manufacturers, melts at 1,200 degrees Fahrenheit.

In addition to metals and mixtures of metals and ceramics, an all-ceramic turbine blade is being investigated for high-temperature engines. Ceramic linings in rocket motors already have been produced, and they have withstood the rigors of test-stand firings.

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Photographs: Cover, Armagh-Dunsink-Harvard Observatory; p. 115, "The Friend," Bloemfontein, S. Africa; p. 117, Manning Brothers; p. 118, Westinghouse Electric Corporation; p. 119, Dan Frankforter—Fairchild Aircraft.

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GENERAL SCIENCE

Research of STS Winners

Independent scientific work of high excellence done by final competitors for Westinghouse Scholarships who will come to Washington Feb. 28 for Science Talent Institute.

➤ HIGH SCHOOL scientists who may be leaders in tomorrow's world of science will meet in Washington on Feb. 28 for five days for the Eleventh Annual Science Talent Institute. They will bring with them exhibits they have made illustrating a project in their particular field of endeavor.

Forecast of Birth Date

➤ MEASUREMENT OF blood changes during pregnancy might form the basis for an exact prediction of the date of childbirth, if the results of an experiment carried out by 16-year-old Robert W. Colman with a pregnant rabbit can be applied to humans.

Mr. Colman, a Far Rockaway (N. Y.) High School senior, discovered that the red blood cell count in his rabbit rose immediately before birth, but dropped sharply on the date of birth. He carried out his experiment as his scientific project in connection with the Eleventh Annual Science Talent Search, and is one of the top 40 winners.

The potential biologist spent ten weeks at the Jackson Memorial Laboratory, Bar Harbor, Me., last summer and did his experiment there. He made five daily measurements on the blood of his rabbit. These were: hemoglobin determination, red blood count, white blood count, differential count and color index.

What appeared to him to be his most important findings were that the red cell count generally correlated with the white cell count, the white cell count constantly declined and a significant drop occurred two days prior to birth, and the red cell count rose immediately prior to birth but dropped sharply on the day of birth.

Future research on this subject, he said, might make possible the prediction of the exact date of birth in the rabbit and this knowledge might be extended to humans.

Soil Moisture Instrument

➤ A NEW method for measuring the amount of moisture in soil has been developed by Paul L. Richards, 17, who attends Riverside Polytechnic High School, Riverside, Calif.

The amount of moisture in soil is an important fact for farmers to know. Previous methods of measuring this factor, according to Mr. Richards, were inefficient because they involved direct contact between the electrothermal unit used for measurement and the soil.

Water absorbs heat to a much greater extent than does soil. Thus the amount of water in soil can be measured by putting a specific amount of heat into a sample of soil. The amount of increase in the temperature can tell how much moisture is in the soil.

In a previous instrument, a single coil of copper wire served both as the resistance thermometer and the heat source.

Mr. Richards used separate elements for his resistance thermometer and his heat source. He put them both in a porous ceramic cup containing a standard porous moisture-absorbing medium.

Preliminary tests indicated to Mr. Richards that this method largely overcame the difficulties with the direct contact type of soil moisture indicator. Further experimental work, he said, showed the need for use of porous membranes and air pressure chambers with the instrument. He is now working on this.

Twin Chicks Hard to Hatch

➤ TWIN CHICKENS are hard to hatch. This was the discovery of 17-year-old Leslie M. Klevay, Jr., Niles Township (Ill.) High School senior, who has studied the embryonic development of double-yolked eggs.

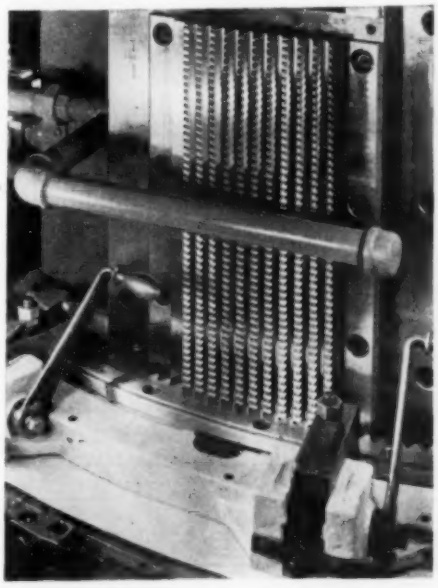
Only three of the 455 double-yolked eggs which he placed in an incubator hatched out twins, and half of one pair of twins died soon after hatching. This compares with 22 hatchings out of 24 single-yolked "control" eggs. Single chicks hatched out of 15 of the double-yolked eggs, Mr. Klevay reports.

Mr. Klevay kept careful records of all the 455 double-yolked eggs in his incubator. He candled them regularly to note their development and when the embryos had died. For this purpose, he developed a new egg candler, suitable for revealing the internal structure of the eggs. Those which had died he broke open to try to discover the cause of death.

He found two critical periods in the development of his embryo twins, the sixth to tenth and the 19th to 22nd days. The young scientist found it impossible to explain the cause of death in the early period, but he believed that the struggle to break the shell had something to do with the high death rate in the second period.

Size of the egg, he found from measuring those which hatched out, did not seem to be a factor in the cause of death. One embryo which died caused the death of the other embryo, he discovered, but what caused the first death is still a mystery to him.

Position of the embyro in the egg during the second critical period might lead to death, Mr. Klevay also concluded.



BROACHING MACHINE—Saving four hours in the production of turret ring gears, this broaching machine is now in operation at the Detroit Arsenal of U. S. Army Ordnance.

Designs Plane Wings

➤ PAUL H. MESSINGER, 18, Dorsey High School (Los Angeles) senior, built his own wind tunnel and then designed a wing for a model airplane.

Mr. Messinger, who would like to become an aeronautical engineer, wanted to test wing sections of his own design for their performance as related to stability, stalling angle, lift and drag.

For his wind tunnel he combined a one-tenth horsepower electric motor with fans, the blades of which he redesigned, to achieve speeds from 15 to 75 miles per hour in the tunnel. A blower was used to introduce smoke so he could see how the wing sections and the air flow interacted.

Now he has neared completion of tests on a U-shaped wing with the propeller near the trailing edge. He has tested out this wing, which he designed himself, on an experimental model airplane.

Early America Visitors

➤ IRREGULAR CONTACT by boat between southeast Asia and Central America may have existed before 1492, according to 17-year-old Alice E. Beck, a senior at A. B. Davis High School, Mt. Vernon, N. Y.

Miss Beck summed up the evidence both for and against travel from southeast Asia

to Central America. Wheeled toys, a parchesi game, pan-pipes, coca-lime chewing, several art motifs, looms and resist-dyeing were things which may have been brought on ships to the western shores of Central America, she said.

On the other hand, she pointed out, many important old world inventions were never known to the new world before Columbus started the westward migration. In addition there was an almost complete divergence of agricultural methods. There are sometimes fundamental differences between supposedly shared inventions, like pyramids. And no social customs seem to have been transplanted.

But the weight of the evidence, she thinks, lies with the existence of irregular contact across the Pacific between southeast Asia and Central America.

Studies Talented People

➤ HIGH-SCHOOL salutatorians seem to make more money in their professions and jobs than do the valedictorians.

This was one of the conclusions arrived at by 18-year-old Ruth F. Harrell, senior at Maury High School in Norfolk, Va. She is ranked number one in her class. She studied, as her scientific project, the subsequent careers of 64 of the valedictorians and salutatorians who had graduated from her school since 1916.

The second honor graduates, Miss Harrell found in studying the questionnaires she devised and which were returned to her, averaged $6,429 in annual income, for those who were working, while first honor students averaged $4,690.

Bright students tend to have a higher proportion of fathers who are in the professional class than is found in the general population. And their fathers are less likely to be laborers.

Only one divorce was found among those of the 64 who had married. This is much less than the average rate. More than two-thirds of the women are married.

Men are superior to the women in the group in average scholastic standing and also in average test scores for college entrance examinations. In the group studied there are almost twice as many women as men.

Aureomycin Helps Fish Grow

➤ TROPICAL FISH grown in an aquarium with the new wonder drug, aureomycin, added to the water seem to have much more vitality than fish grown without the antibiotic. Also, there is some evidence that they grow larger, concludes 17-year-old David A. Goldstein.

The young scientist, who is a senior at Monroe High School, Rochester, N. Y., divided 31 tropical fish into three tanks. To two of the five-gallon aquaria he added 100 milligrams of aureomycin daily. The third he used as a control tank.

KILOWATT CHINA—Undergoing trial by lightning to reveal any flaws are these ceramic insulators. The white streamers cascading over the porcelain are arcs of man-made lightning, 90,000 volts strong. Electricity jumps from the three solid brass conductor rods to the vertical electrodes placed in the center of each insulator, then flashes over the insulators themselves.

At first, the fish without the antibiotic surpassed in growth those swimming around in the aureomycin solution. But after about a month and a half, the treated fish surpassed the control fish. One surpassed the control fish by 35% in growth rate.

Some of the aureomycin fish died, but of no evident disease. None of them developed the diseases which maturing fish so frequently contract, said the young scientist.

On the other hand the fish without the wonder drug developed a disease known to tropical fish fanciers as the "shimmy." This finally made necessary the stopping of the experiment.

Observes Jupiter

➤ BUILDING THREE telescopes and two machines for grinding and polishing telescope mirrors was the scientific project of 17-year-old Eugene E. Epstein.

With this equipment, the Hollywood (Los Angeles) High School senior was able to approximate the equipment of a professional observatory and to carry out a series of observations on the planet Jupiter.

He constructed a long focus, ten-inch telescope, a six-inch telescope with two mirrors, and a portable four-inch telescope.

With this ten-inch telescope, the young scientist determined the drifts and rotation periods of three atmospheric disturbances on the planet Jupiter. The first was the famed Red Spot, the second a white cloud south of the planet's south temperate belt, and the third a split in the south temperate belt.

Builds Stereophonic Recorder

➤ CONSTRUCTION of a machine which will record music so that an orchestra will sound as though it is actually in the room with the listener was the scientific project of Dana D. Mitchell, 18, a New Rochelle (N. Y.) High School senior.

Mr. Mitchell attempted to achieve the effect of binaural or stereophonic hearing of his recordings, somewhat as the old-fashioned stereoscope gave a three-dimensional effect to photographs. He did this by placing two microphones in front of and at each side of the orchestra and recording the sounds picked up by each microphone on separate channels of the same magnetic tape.

Two loudspeakers, placed in positions similar to the microphone then, he figured, would give the listener if he shut his eyes the illusion of being in the concert hall. The instruments would sound as though they came from different parts of the "stage."

Mr. Mitchell largely built his own tape-recorder. He has plans to test the most effective placement of the microphones and also of the performers.

RADIO

70 New TV Channels Soon

Deep freeze for television station construction permits may thaw within the next 60 days. Possibly 2,000 stations may be built, putting TV within eye-shot of new areas.

➤ THE DEEP freeze in which construction permits for television stations have been stored since 1948 may be opened within the next 60 days for a good thawing out. Video fans may soon have more than 12 channels on new TV sets, and communities not served by TV may soon see tall transmission towers rising in the distance.

McIvor Parker of the Federal Communications Commission's television-facilities division said he expected the FCC to open new ultra-high frequencies for television channels "probably within 30 to 60 days, barring unforeseen developments."

To the television industry, that means construction of a possible 2,000 brand new stations scattered throughout the United States. To the layman, it means video will blanket areas not at present within TV eye-shot, and more channels in areas which are.

When the new ultra-high frequency range (from 470 megacycles to 890) is opened, it will make 70 new UHF channels available in addition to the present 12 very-high frequency channels. Present TV receivers can be equipped with a device to receive the UHF channels, Mr. Parker said. He estimated the "converter" would cost between $25 and $100.

Each channel can be used by more than one station if stations using the same channel are about 180 miles apart. Mr. Parker predicted possible TV coverage for every community as an outgrowth.

About 500 applications for television station construction permits already are in the FCC freezer, Mr. Parker said. The Commission expects about 500 more applications as soon as the UHF channels are cleared.

Construction permits for television stations have not been granted since September of 1948 because of technical difficulties encountered in the new medium. One of the troubles arose when television stations began interfering with each other due to atmospheric effects on television waves.

Converters Are Ready

➤ SPOKESMEN REPRESENTING a large radio-television manufacturing company have said that their company is ready to meet equipment demands when the Federal Communications Commission opens 70 ultra-high-frequency channels for television broadcasting.

Allen Mills of the Radio Corporation of America's home-instruments department said his company was producing three types of converters (to be used on older models of TV sets). The converters are in addition to a combination ultra-high-frequency and very-high-frequency tuner which is interchangeable with regular VHF tuners supplied on RCA television sets since last September, he said.

Two of the three converters are so constructed that most persons can attach the device to their own sets. One type of converter, however, probably would have to be installed by a serviceman, he said.

C. M. Sinnett, also of RCA, reported that video set owners probably would not have to make any change in their antenna systems if they were situated in a reasonably strong UHF signal area, or if the antenna did not need orienting to a new UHF television station.

"The best thing to do is hook up your set with the converter and try it," he said. He thought some adjustments would have to be made in the majority of cases, however.

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BAFFLE RINGS — When installed on airplane engine mounts, the stainless steel baffle rings, looking like collars, form a fire seal between the combustible forward section and the fuel and oil lines that lead to the rear of the engine.

● RADIO

Saturday, Mar. 1, 1952, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. and Mrs. Matthew W. Stirling, discuss "Explorations of Ancient Civilizations." Dr. Stirling is director of the Bureau of American Ethnology, Smithsonian Institution, Washington.

ORNITHOLOGY

Masked Bobwhite May Be Saved from Extermination

➤ THE MASKED BOBWHITE, a kind of quail once found chiefly in southern Arizona and in Sonora, Mexico, may have been saved from extinction.

The persistent search of J. Stokley Ligon, Carlsbad, N. Mex., Louis Lawson and George Peterson of the Arizona Federal Aid Service for the last few specimens of this vanishing bird in Mexico has resulted in prospects of saving the Masked Bobwhite from extermination.

An upsurge in the last 15 years in the cattle business was the reason for the near-extinction of this quail. Where previously the land favored by the bird, a deep-grass-weed habitat, had been practically untouched, livestock use soon destroyed the land cover, beating it down into a state of desolation unsuitable for the quails.

A long and thorough search in Mexico recently resulted in the bagging of 25 live specimens, and these have now been brought to the U. S. The main hope for survival of the Masked Bobwhite lies in its restoration on former range in southern Arizona, by propagation and carefully managed stocking in that area or in other suitable habitats, Mr. Ligon states.

In 1937, some of these birds were imported from Mexico, but lack of advance preparation and follow-up care, Mr. Ligon reports, caused the seeming failure of this experiment.

Science News Letter, February 23, 1952

PHYSICS

Atomic Energy By-Products On Trial as Drug Sterilizers

➤ ATOMIC ENERGY by-products are now being tried out as sterilizers of the modern "miracle drugs," such as penicillin, streptomycin and others. If this proves practical, it will simplify the sterilization of the drug.

The idea is "wonderful" and Food and Drug Administration officials hope it works, Dr. Henry Welch, head of the FDA's antibiotics division, said at a Stanford Research Institute sponsored conference on the subject.

He warned, however, that manufacturers must not leave anything in the antibiotics that would be harmful to users.

Science News Letter, February 23, 1952

OCEANOGRAPHY

May Predict Ocean Waves If Three Factors Are Known

➤ STORM-GENERATED OCEAN waves, which eat away at the nation's beaches and batter ships at sea, may be predicted if three things are known about the responsible storm.

This is a finding of the engineering research division of New York University, working under contracts from the Army's Corps of Engineers and the Office of Naval Research.

These three factors must be known about the storm: 1. The dimensions of the storm area. 2. The duration of the storm. 3. The characteristics of the turbulent eddies of the storm.

Because air masses differ in their stability, N. Y. U.'s Engineering Research Review said, different storms have widely different turbulent characteristics. Winds from the north, for instance, buffet the sea surface more than do winds from the south, even though they travel at the same average speeds.

It was pointed out that the east coast of the United States loses about one foot of beach a year, because of the action of wind and waves. Some are built up—like the beach at Sandy Hook—with the sand from other areas, but the net result is a loss.

Meteorologists and oceanographers at N. Y. U. under Drs. Bernard Haurwitz and Willard J. Pierson have developed a ripple tank where the effect of obstructions can be seen and photographed, and a wave analyzer for the statistical analysis of ocean waves.

Using these and other tools, the scientists have constructed mathematically on paper a "model storm." The waves from this theoretical storm show all the properties of a storm in nature.

With the information thus gathered, not only may the waves be predicted, but also measures might be taken to allay erosion and to protect ships in harbors and at sea.

Science News Letter, February 23, 1952

ORNITHOLOGY

Museum Proud Of Two New Peacocks

➤ THE SMITHSONIAN Institution is proud of two peacocks added to its collection of mounted birds.

They are Congo peacocks (*Afropavo congensis*), the largest of the new distinct species of birds discovered anywhere in the world during the past 20 years.

A fairly primitive peacock stock is represented by the mounted birds, received as gifts from the Musee du Congo Belge of Tervuren, Belgium. From this stock the splendid and well-known peacocks of Asia were descended and these resplendent peacocks and the more ordinary pheasants are linked by the primitive stock.

This is evidence for an ancient connection between the forested areas of equatorial Africa and those of southern Asia.

The Congo peacock was discovered by Dr. James P. Chapin of the American Museum of Natural History. In 1913 he recognized a single feather from the hat of a Belgium Congo native as one from a large unknown bird. Then in 1936 at the Congo Museum in Belgium he found two mounted birds which matched the feather and which turned out to be the new species, which he later collected in the field.

Science News Letter, February 23, 1952

BIOPHYSICS

X-Ray Photographs Made With Radioactive Thulium

➤ MAKING X-RAY pictures without bulky X-ray equipment has been accomplished by a British professor of physics, W. V. Mayneord, of the Royal Cancer Hospital, London, England.

Using a few grains of the oxide of the rare metal, thulium, after it had been irradiated in the British atomic pile at Harwell, Prof. Mayneord succeeded in taking clear X-ray pictures of the teeth embedded in a skull and of the bones of the hand.

When the thulium atoms are exposed to the neutrons in the atomic pile, they each pick up a neutron and become radioactive, shooting forth principally highly penetrating gamma rays. It is these gamma rays that pass through the tissues and affect the photographic plate, so perhaps they would be better called gamma ray pictures.

Industry has for some years been using irradiated metals, principally cobalt 60, as sources of gamma rays for taking pictures through heavy metal castings, but the rays from these metals are too powerful and damaging to cells to be used on living tissues.

Rays from the irradiated thulium are of 84 kilovolt energy, safely comparable to the 100 kilovolt X-rays already being used in hospitals. It is the softness of the thulium gamma rays which permitted them to be used to take pictures of soft alloy castings, at first reported by SCIENCE SERVICE last summer.

In Prof. Mayneord's preliminary experiments, long exposures had to be used because of the weakness of his source of rays, but he suggests that "if sources of sufficient activity can be obtained, radioactive isotopes emitting low-energy gamma rays will be of use in diagnostic radiology." Prof. Mayneord thinks such sources will surely be found.

He does not expect that radioactive isotopes are likely to compete seriously with X-ray machines where the latter can be used conveniently, but points out that "the advantages, in both peace and war, of a small source of X-radiation, free from electric mains and complex equipment, are apparent."

Science News Letter, February 23, 1952

IN SCIENCE

PHYSIOLOGY

Contact Lens Halos Due to Oxygen Lack

➤ THE CORNEAS, or windows, of the eyes need oxygen for the job of letting in light. Contact lenses keep out air and its oxygen and that is why people who wear these lenses find their vision getting hazy after a while and why they see halos around lights.

This explanation is proposed by Drs. George K. Smelser and V. Ozanics of Columbia University. It is based on experiments with persons fitted with diving goggles in which the eyes could be exposed to various gas mixtures. Bright halos and hazy vision developed in less than two to three hours when nitrogen gas was let into the goggles, although no halos were seen when moist air or air and carbon dioxide mixtures were used.

In other experiments, the scientists found that adding oxygen bubbles to contact lens fluid prevented halos when the contact lenses were worn for as long as seven hours. The bubbles became smaller during the experiment, showing that the cornea was using the oxygen.

Oxygen presumably is involved in removal of water from the cornea, and when the cornea is deprived of oxygen by contact lenses, a water-logged condition may develop and cause the haziness of vision and the halos.

The new explanation of this condition is presented to fellow scientists in the journal SCIENCE (Feb. 8).

Science News Letter, February 23, 1952

MEDICINE

It's a Fluke in the Water That Causes That Itching

➤ "SWIMMERS' ITCH" in Hawaii, known locally as "Pearl Harbor itch," may be due to a newly discovered marine larval schistosome, or fluke. This fluke might also be the cause of sea bathers' eruptions in Florida.

The new schistosome, or fluke, was discovered in snails collected from Moku Manu, or "Bird Island," and from another bird refuge area, Manana, or "Rabbit," Island.

This fluke can cause itching and eruption when it gets on human skin, patch tests on human volunteers showed.

Discovery of the fluke, first skin irritating one to be found in Hawaiian sea water, and tests with it are reported by Dr. George W. T. C. Chu of the University of Hawaii in the journal SCIENCE (Feb. 8).

Science News Letter, February 23, 1952

SCIENCE FIELDS

ENTOMOLOGY

Insect Found in Rain of Ice Crystals

➤ TO THE old saying about "raining cats and dogs," you may now add insects. Dr. W. R. Henson of the Forest Insect Laboratory, Sault Ste. Marie, Ont., reports that a tiny insect enclosed in a natural ice crystal was observed falling during a rain of ice crystals at Banff National Park.

There is no previous record of such an icy encasement for an insect to Dr. Henson's knowledge. The minute animal, a chironomid, is a midge, somewhat mosquito-like in form, but more delicate than mosquitoes. The chironomid was dead when the crystal was melted at room temperature. Dr. Henson believes that the insect was carried to the level of ice formation by the updraught on a nearby mountain slope. Average length of the ice crystals falling when the insect-enclosing crystal was found was about two-tenths of an inch.

Science News Letter, February 23, 1952

BIOCHEMISTRY

Blood Test Tells Horse Meat from Beef

➤ HORSE MEAT can be distinguished from beef by exactly the same kind of test that police use when they want to tell whether blood is from humans or from animals. Making the standard tests requires special training. There is no known test a housewife can do at home or at the butcher's to make sure that horse meat is not being foisted off as beef.

Antibodies in the blood act as the chemical detectives, Dr. Albert R. Miller of the meat inspection division of the U. S. Department of Agriculture explained. Antibodies are protein substances formed in the blood of either humans or animals to combat foreign substances in the blood stream. Different types of antibodies are developed specifically to counteract different foreign substances, whether the invaders are bacteria or other proteins not normal to the blood.

To distinguish horse meat from beef, chemists take a little blood from the suspected meat and centrifuge it to separate the red blood cells from the serum. A rabbit is then injected for three consecutive days with serum taken from the blood of a horse.

After waiting about 10 days from the original injection, some of the rabbit's blood is withdrawn and centrifuged to separate the serum from the red blood cells. This serum, which now contains antibodies built up by the rabbit's blood system to fight the horse meat proteins foreign to it, is then mixed with the serum from the suspected meat.

If a white cloudy precipitate forms immediately, the meat was from a horse. The same type of reaction would also work for human, beef or hog's blood, provided that the rabbit blood had been sensitized to the foreign proteins of each.

Normally the rabbit serum containing the antibodies, known as the anti-serum, is not kept on hand in the chemical laboratories where such testing is done. If, however, there is a flurry of fraud cases such as have been reported from Illinois recently, the tests can be speeded up considerably by keeping on hand rabbit anti-serum that contains antibodies against horse proteins.

Of the 88,659,000 animals—cattle, calves, swine, sheep and horses—slaughtered during the year ending June 30, 1951, under the inspection of Department of Agriculture officials, only 319,601 were horses, Dr. Miller reported. Inspected horse meat is used mainly in dog food.

Science News Letter, February 23, 1952

INVENTION

Wing Reduces Drag On Supersonic Planes

➤ A NEW form of wing for supersonic airplanes which will reduce the "wave drag" associated with thick wings, while at the same time avoiding the excessive weight that goes with extremely thin wings, has been invented by Alan Arnold Griffith, Derby, England, and assigned to the Rolls-Royce company of England.

The invention received American patent number 2,584,198.

The wing of his supersonic plane has a leading edge which consists of open air ducts to feed into the air-consuming gas turbine or jet engine. He asserts that the wave drag associated with wing thickness is for the most part in the form of shock wave accompanying the intake of air. It is present whether the intake is inside the thick wing, or outside a thin wing.

Science News Letter, February 23, 1952

INVENTION

Patent "Foldable Apron" For Junior's High-Chair

➤ HIGH-CHAIRS MAY in the future be equipped with a "foldable apron" gutter to catch food which Junior spills while eating. Placed on the floor, the gutter embraces three sides of the high-chair. The food-catching apron was invented by George H. Caponera of Harrison, N. Y. It was given patent number 2,585,434. The gutter is not intended to be effective when Junior hurls food across the room.

Science News Letter, February 23, 1952

BIOPHYSICS

Eight-Ton Cobalt 60 Room To Speed Medical Research

➤ AN EIGHT-TON chamber, whose heart is a piece of radioactive cobalt weighing only 30 grams, has been installed at the Atomic Energy Project at the University of California at Los Angeles to speed medical research on the West Coast.

The radioactive material is known as cobalt 60 and has a radiation output the equivalent of 100 grams of radium. It was made at the Oak Ridge National Laboratories.

One of three in the United States, the chamber stands five feet high, measures 40 inches across and is shielded by plates of lead 8½ inches thick.

Dr. M. A. Greenfield, associate professor of radiology in the U.C.L.A. Medical School and section chief with the Medical School's Atomic Energy Project, pointed out that the chamber will be used mostly for basic scientific studies of the effects of radiation on matter.

The chamber and shielding is constructed so that it is extremely safe to use. It is mechanically simple in construction, minimizing the chance for breakdowns in the safety of the technique. Only a few seconds are required to load a sample to be irradiated.

"The chamber is so safe that a person could lean against it for many hours each day and still get only a small fraction of medically-accepted radiation limits," Dr. Greenfield said.

Science News Letter, February 23, 1952

INVENTION

Optical System for Better TV Pictures

➤ MORE ACCURATE television pictures and less distorted views of the stars and planets may result from an invention which received a patent recently.

Assigned to the Farnsworth Research Corp. was patent number 2,585,009, for a concentric optical system. The inventor, Francois Charles Pierre Henroteau. Fort Wayne, Ind., claims that this does away with some of the distortions now present in the optical systems used in television projectors and cameras and in telescopes.

One optical system having in general the desired properties, says the inventor, is based upon the well-known Schmidt camera, designed for taking pictures of the heavens. However, he claims, the Schmidt optical system produces certain distortions in the image to be photographed.

The inventor claims to do away with this difficulty by providing an optical system composed principally of optical surface members which change the direction of various light rays and which are portions of concentric spheres.

Science News Letter, February 23, 1952

ASTRONOMY

Springtime Constellations

March brings best opportunity to see elusive Mercury. Mars, Saturn and Jupiter are other planets visible in the coming month's night sky.

By JAMES STOKLEY

► WITH THE coming of spring, which begins officially on March 20 as the sun passes directly over the equator, the new season is reflected in the appearance of the evening sky.

Orion, the warrior; Taurus, the bull; the great and lesser dogs, Canis Major and Minor, and their neighbors, are still with us but have shifted from their position of honor high in the south which they held a month or two ago. They are now in the western sky, preparing to disappear soon as the spring and summer constellations replace them.

Two constellations that are typical of the springtime skies are seen in the east. Their positions are indicated on the accompanying maps, which depict the sky at about 10:00 p. m., your own kind of standard time, at the beginning of March, an hour earlier in the middle of the month and two hours earlier at the end.

These constellations are Leo, the lion, and Virgo, the virgin, the former being uppermost. In Leo is a smaller group, called the Sickle, and the first-magnitude star, Regulus, is at the end of the handle.

Below Leo we find Virgo in which, close to the horizon, is another star of similar brightness, Spica. In addition, Virgo now is the location of the planet Saturn, which is even brighter.

March also brings us the best opportunity of the year to see elusive Mercury, a planet which never gets far enough away from the sun to be seen in a really dark sky.

When it is farthest east of the sun, it remains above the horizon for a time after sunset, and the time is longest when such a "greatest eastern elongation" occurs near the beginning of spring, as it does this month on March 18.

For a few evenings before and after that date, if it is clear toward the west soon after the sun has gone down and as dusk begins to fall, look in that direction for a single, bright object, not far above the horizon. This will be Mercury.

It will then be about two and a half times as bright as Saturn, though of course it will not appear as brilliant because it will be so low, and surrounded by the glow of twilight.

A third planet can also be seen these evenings, though, like Mercury, it sets before the times for which the maps are prepared. This is Jupiter which is in the constellation of Pisces, the fishes, just below the figure of Aries, the ram. It is even brighter than Sirius, the brightest star, which is in Canis Major in the south.

Mars, at the beginning of March, rises a little before midnight, while Venus is a morning star, shining brightly low in the east, just before sunrise.

By the end of March, Mars will rise considerably earlier—about 9:30, and will be more than twice as bright as it was 30 days earlier. It is now rapidly moving earthwards for its close approach in May. While on March 1 its distance is 87,704,000 miles, by the 31st it will have drawn some 23,000,000 miles closer, to a distance of 64,731,000 miles. It is this approach that will make it shine more brilliantly in the sky.

Mars is not the only celestial object that changes its distance considerably during the month, for so does the moon. This, however, is a regular event. In the 29-day period during which the moon swings around and goes through its change in phase, it comes closer to earth and then recedes, because its orbit is not circular, but elliptical.

Every month, therefore, we have a time when the moon is in perigee (which means near earth). A little more than two weeks later, it is in apogee (away from earth). This month apogee comes first, on March 6, at 6:00 p. m., EST, when we are separated from our satellite by 251,830 miles. On the 22nd, at 5:00 p. m., we have perigee, when the two bodies are only 277,070 miles apart.

This, of course, is the distance between centers. With the earth's diameter of nearly 8,000 miles, and the moon's of more than 2,000 miles, the actual distance from surface to surface is roughly 5,000 miles less than the figures given.

One important effect of this changing distance of the moon is in the height of the tides, which are due to the gravitational pull of the moon and, to a lesser degree, of the sun. This pull decreases with the square of the distance. Accordingly, water nearest the moon is pulled the most and bulges toward the moon.

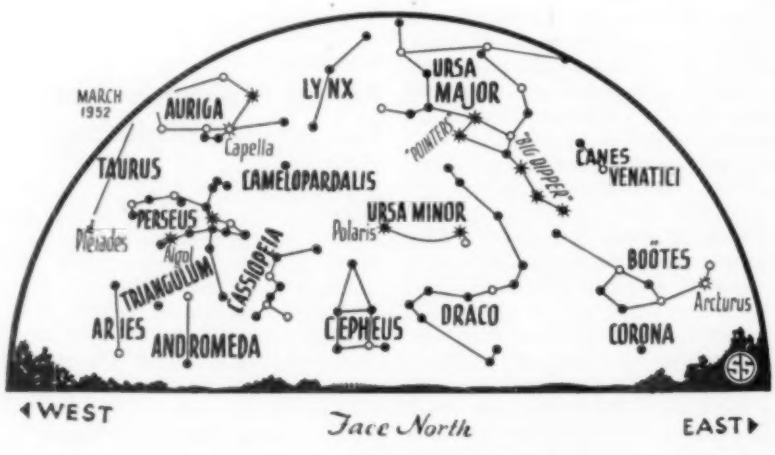
On the opposite side, the water is pulled least; less, in fact, than the solid earth itself. This means that there is also a bulge on the side away from the moon, since here the earth is pulled away from the water.

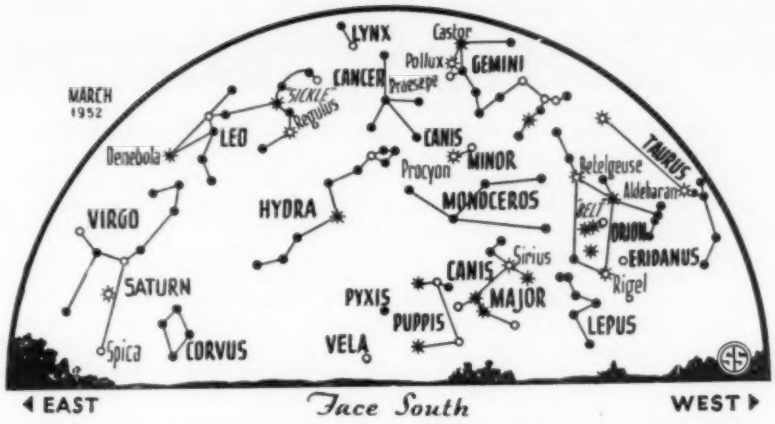
Of course, the difference of nearly 25,000 miles in the moon's distance during the month is about three times as great as that between the near and far sides of the earth. Thus, the tidal force at perigee is about 30% greater than at apogee, and the range of the tides at perigee is accordingly greater.

The sun, likewise, changes its distance during the year, from 91,400,000 miles on Jan. 4 to 94,600,000 on July 4. It has a tide-raising force which is nearly half as much as the moon's, and which varies through the year, being greatest in January when the earth is nearest and least in July.

When earth, moon and sun are all in line, as they are at new moon and full moon, the lunar and solar tides act together, and reinforce each other. In between, at first and last quarter phases of the moon, one tends to counteract the other.

The latter are called the "neap" tides, while the former are the "spring" tides. This word, "spring," of course, has no connection with the season of the year that starts on March 20, since there are such tides at any time of year. The greatest tidal range of all comes when there are spring tides when the moon is in perigee.





☼ ✸ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

Celestial Time Table for March

March	EST	
3	12:30 a. m.	Algol (variable star in Perseus) at minimum
	8:43 a. m.	Moon in first quarter
5	9:20 p. m.	Algol at minimum
6	6:00 p. m.	Moon farthest, distance 251,830 miles
8	6:05 p. m.	Algol at minimum
11	1:14 p. m.	Full moon
16	2:30 a. m.	Moon passes Mars
18	9:40 p. m.	Last quarter
	10:00 p. m.	Mercury farthest east of sun
20	11:14 a. m.	Vernal equinox, spring begins
22	5:00 p. m.	Moon nearest, distance 227,070 miles
23	9:22 p. m.	Moon passes Venus
25	3:12 p. m.	New moon
25	11:05 p. m.	Algol at minimum
26	10:50 p. m.	Moon passes Mercury
27	12:04 a. m.	Moon passes Jupiter
28	7:54 p. m.	Algol at minimum

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, February 23, 1952

METEOROLOGY

Cold Still Due in East; Warm in West

➤ THE NATION'S weather put on its brakes and slowed down during the first two weeks of February. The weather pattern predicted by the Weather Bureau's Extended Forecast Section for the month of February was about a week later in coming than was expected.

The long range forecasters are now predicting once more that temperatures will be colder than usual during the period up to the middle of March over the eastern half of the nation. The Great Lakes region, however, will experience near normal temperatures.

Until March 15, warmer weather than usual is forecast for the northern plains, the Northern Rockies and along the West Coast. Elsewhere it will be about as usual.

This is substantially the same weather pattern that was predicted the first of the month for all of February. However, it was about a week late in arriving.

Some snow and sleet and more rain than usual are predicted for the southern portions of the country. Less than normal amounts of rain and snow are expected in the northern sections of the country, and a band from east to west across the middle will have about as much precipitation as usual.

Science News Letter, February 23, 1952

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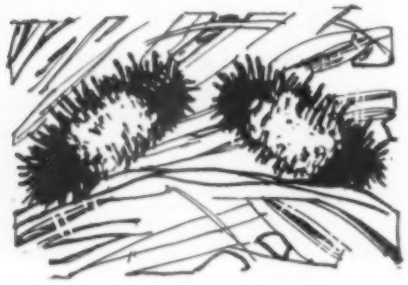
BIOLOGY

NATURE RAMBLINGS



Veterans of Winter

➤ WOOLLY - BEAR CATERPILLARS sometimes surprise us, during spells of mild weather, by suddenly appearing out of nowhere, to go humpity-hump across our paths.

Most of us, remembering the first (and perhaps only) nature lessons we received, think that proper caterpillars should spin themselves into cocoons in the fall, to emerge as butterflies or moths in the spring. To see a caterpillar active so long after autumn seems a contradiction of our kindergarten lesson.

It is a contradiction. We did not learn everything in the kindergarten—least of all about nature. The teacher gave us as much as she thought we could absorb at the time; it is not her fault if we stopped learning when she stopped teaching us. The story she gave us is true enough—for that kind of caterpillar.

Woolly-bears, and a great many other kinds, have a different kind of life history. They hatch and grow up in late summer, hide out in sheltered cracks and crannies during the winter, and go on being caterpillars for a while when warm weather comes again. Then they spin sketchy nests —hardly to be dignified as cocoons—sleep briefly as pupae, and emerge as adults.

Still other members of the butterfly-moth order live through the winter as adults, clinging motionless to bark or twigs in the woods. A familiar example is the beautiful dark-winged mourning-cloak butterfly.

What is true for members of this one order is true throughout the whole world of many-legged lesser animal life. Whole hosts of insects, spiders, etc., quietly die in autumn, leaving only their eggs to survive the cold winter winds and renew the life of their species in spring. Others endure the hard season as larvae or pupae, hidden away in the safest lurking-places they can find, and ready to complete metamorphosis into adults when the sun shines longer and more warmly each day.

Still others manage to live through as adults, and are thus able to get an early start when warmth permits them to move and feed and mate again.

Science News Letter, February 23, 1952

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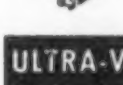

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BIOLOGY

Anesthetic Stops Brown Peach Rot

➤ A WAY to keep peaches from turning brown between the time they are harvested and the time the housewife buys them at market has been discovered by Drs. J. S. Vandemark and E. G. Sharvelle of Purdue University, Lafayette, Ind.

The method would be to treat the peaches with volatile chemicals such as the anesthetic, trichloroethylene.

Brown rot losses of peaches in transit due to the microorganism, *Monilinia fructicola*, often run to more than 10% of the crop value and greatly limit distribution, the scientists point out.

Trichloroethylene treatment in the laboratory prevented all breakdown of fruit inoculated with the brown rot germs. It was effective in concentrations as low as one part in 10,000. Peaches and plums exposed to this and stronger concentrations of the chemical for 24 hours were not injured.

The studies are being extended to test volatile chemicals as preventives of market, storage and in-transit losses of other fruits and vegetables when such losses are caused by microorganisms.

Details of the studies are reported in the journal of SCIENCE (Feb. 8).

Science News Letter, February 23, 1952

CHEMISTRY

Gas War Scares in Korea

➤ GAS WARFARE "scares" have occurred several times since the fighting in Korea began, Maj. Gen. E. F. Bullene, the Army's chief chemical officer, admitted to members of the American Chemical Society meeting in New York.

The "scares," however, all proved to be of nonmilitary origin.

"In one instance," Gen. Bullene reported, "a Korean child playfully banged away the corroded plug off a cylinder of chlorine and caused a number of casualties in recaptured Seoul. It was found that the gas was part of the equipment of wrecked city waterworks and Chemical Corps teams had to gather up the unused chlorine and dump it in the Han River."

Far worse gas "scares" may be in store for us and we may have a "gas-type Pearl Harbor," Gen. Bullene warned, if the present public apathy toward gas warfare is allowed to continue.

After the lessons of World War II, he pointed out, any nation planning aggression upon a well-industrialized nation would be likely to choose the weapon or combination of weapons giving promise of victory with a minimum of destruction.

"Chemical agents," he said, "are primarily anti-personnel weapons, but by incapacitating the individual workers, the machinery and facilities needed for defense of the attacked nation would come to a standstill.

"Thus we must assume that our great industrial nation could be the object of such an attack."

Science News Letter, February 23, 1952

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METEOROLOGY

Rainmaking Project Stops

"Project Cirrus" scheduled to close down July 1 after five-year investigation of artificial modification of clouds with view to military applications.

➤ "PROJECT CIRRUS," the Defense Department's five-year research project in rainmaking and the artificial modification of clouds, will close down July 1, SCIENCE SERVICE has learned.

The Army Signal Corps' contract with the General Electric Company ends at that time and, by mutual agreement, it will not be renewed. Nor will another corporation be asked to take over the research work. Official announcement of the move will be made soon.

"Project Cirrus" began in 1947 as a result of the discovery in 1946 by Dr. Vincent Schaefer, young General Electric scientist, that the process of making raindrops in clouds could be artificially started if they were "seeded" with dry ice. Later, another G.E. scientist, Dr. Bernard Vonnegut found that silver iodide crystals, which resemble ice crystals in structure, could start off the process.

Dr. Irving Langmiur, Nobel prize winner and now retired as a top G.E. researcher, said that seeding clouds with extremely small amounts of silver iodide produced effects in the weather observable over half to two-thirds of the United States. This assertion has been disputed by most meteorologists, both inside and outside the U. S. Weather Bureau.

"Project Cirrus" worked under a steering committee headed by Dr. Michael J. Ference, of the Signal Corps Engineering Laboratories, Belmar, N. J. On the committee are representatives of the Air Force, the Office of Naval Research and G.E. After its formation, a representative of the U. S. Weather Bureau was informally asked to sit in.

The most recent statement made by the Defense Department on the work of "Project Cirrus" was issued July 19, 1950. The statement said in part:

"The question 'Can you make it rain?' has received an answer in the affirmative in many experimental instances where atmospheric conditions were suitable, but the question of how much precipitation can be artificially induced or if the amount would be of any economic significance is yet to be determined."

However, Defense Department representatives in "Project Cirrus" stressed that they were not interested primarily in artificial rainmaking. Their interest was in the military, air and naval applications of cloud modification. One small example of such application would be the usefulness to a pilot to be able to cut a hole in a cloud covering the airport at which he is trying to land.

A member of the steering committee told SCIENCE SERVICE that he is confident research along the general lines covered in the project would go on in some form or other. But it is believed that project members think the particular job of "Project Cirrus" is completed.

Science News Letter, February 23, 1952

PLANT PHYSIOLOGY

Leaf Analysis Tells Fertilizer Needs

➤ SCIENTISTS AT the University of California are trying to find a way to analyze the chemical content of leaves, and thus determine the amounts and kinds of fertilizer that plants need.

The study is important because both plants and soil differ widely in their chemical makeup.

For example, tomatoes growing on one kind of soil may be very different chemically from tomatoes growing on another kind of soil. Also, tomatoes and peas growing on the same kind of soil may be different in chemical content. Climate and cultivation practices affect plant growth and the amount of minerals taken up from the soil.

Although much work is still to be done before a leaf can be analyzed to tell for sure what fertilizer a plant needs, a start in this direction has been made.

Biochemists Clarence M. Johnson and Hideo Nishita have worked out a new test for sulfur in plant leaves and stems. This method, faster and more accurate than those used previously, can detect amounts of sulfur one-thousandth as small as older methods.

Mr. Johnson has modified older tests for nitrates in plants to make them faster and more reliable.

Much work needs to be done on the hundreds of kinds of crops and more than 1,000 kinds of soil to be found in California alone.

Science News Letter, February 23, 1952

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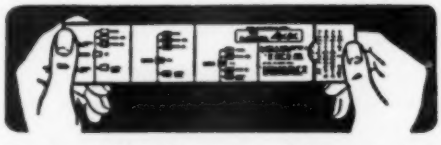

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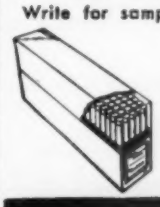

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THE ADSORPTION OF NORMAL PARAFFINS ON CRACKING CATALYSTS—Robert C. Zabor and Paul H. Emmett—*Mellon Institute*, 5 p., paper, free upon request to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

AN ANALYSIS OF THE DISTRIBUTION OF THE BIRDS OF CALIFORNIA—Alden H. Miller—*University of California Press*, 93 p., illus., paper, $1.50.

ANNUAL REPORT OF THE PUBLIC HEALTH RESEARCH INSTITUTE — *Public Health Research Institute*, 48 p., illus., paper, free upon request to publisher, foot of East 15th St., New York 9, N. Y. Brief summaries of research conducted during the year.

DICTIONARY OF GEMS AND GEMOLOGY: Including Ornamental, Decorative and Curio Stones—Robert M. Shipley and others—*Gemological Institute of America*, 5th ed., 261 p., $5.50. Definitions of over 4,000 terms.

FLORA OF THE CHARLESTON MOUNTAINS, CLARK COUNTY, NEVADA—Ira W. Clokey—*University of California Press*, 274 p., paper, $2.75, cloth $3.75. A detailed account of the native plants of an isolated mountain range between the southern Sierra Nevada and the Rocky Mountains.

GENERAL BIOLOGY—James Watt Mavor—*Macmillan*, 4th ed., 875 p., illus., $5.75. In this textbook, the emphasis is on the scientific method.

HISTORICAL GEOLOGY: A Laboratory Manual for Geology, Part II—Kirtley F. Mather and Chalmer J. Roy—*Appleton*, 96 p., illus., with worksheets, paper, $2.75. Intended for students in a full year college course.

THE INFLUENCE OF HORMONES ON ENZYMES—R. I. Dorfman and E. D. Goldsmith and others—*New York Academy of Sciences*, 208 p., illus., paper, $3.50. "The study of enzymes," quote the authors, "may be characterized as the oldest of the arts and the newest of the professions." Here are a group of professional papers on the subject.

LIGHTNING AND THUNDER—Herbert S. Zim—*Morrow*, 64 p., illus., $2.00. An attractively illustrated book for children (of whatever age) on a common but often terrifying phenomenon of nature.

MAN ANSWERS DEATH: An Anthology of Poetry—Corliss Lamont, Ed.—*Philosophical Library*, 2d ed., 330 p., $4.50. A collection of poems ranging from ancient Israel, Greece and Rome to the present, centered around the philosophy of Humanism.

THE MANUFACTURE OF INTERMEDIATES AND DYES: An Introduction to Works Practice—G. H. Frank—*Chemical Publishing Co.*, 177 p., illus., $4.50. Intended to answer questions as to how *this* is made and why *that* is used.

MIGRATION OF BIRDS—Frederick C. Lincoln—*Doubleday*, 102 p.,illus., $1.00. Interesting facts about the speeds, directions and altitudes of migrations with maps and other data.

MOST-OFTEN-NEEDED 1952 TELEVISION SERVICING INFORMATION — M. N. Beitman — *Supreme Publications*, 192 p., paper, $3.00. Information and diagrams of value to service and repair men.

NORTH OF THE CIRCLE—Frank Illingworth—*Philosophical Library*, 254 p., illus., $4.75. A book for armchair voyagers who like to visit unusual parts of the world.

PASTEUR'S STUDY OF FERMENTATION—James Bryant Conant, Ed.—*Harvard University Press*, 57 p., paper, $1.00 Number 6 in a series of "Case Histories in Experimental Science" designed to help the student to recapture the experience of those who have participated in exciting events in scientific history.

SELECTION, TRAINING, AND USE OF PERSONNEL IN INDUSTRIAL RESEARCH: Proceedings of the Second Annual Conference on Industrial Reaserch, June, 1951—Department of Industrial Engineering, Columbia University, Sponsor—*King's Crown Press*, 274 p., paper, $4.50.

A SYSTEMATIC REVIEW OF THE HARVEST MICE (GENUS *REITHRODONTOMYS*) OF LATIN AMERICA—Emmet T. Hooper—*University of Michigan Press*, 225 p., illus., paper, $4.00. These little rodents range from southern North America to northern South America and from below sea level in Death Valley to over 13,000 feet on the mountains of Mexico and Central America.

WHERE WINTER NEVER COMES: A Study of Man and Nature in the Tropics—Marston Bates—*Scribner's*, 310 p., illus., $3.50. By a naturalist whose interest in the tropics received its first satisfaction when he went to study insects in Central America. A book on life in the warm countries with the emphasis on man.

Science News Letter, February 23, 1952

CAR QUIZ

1. Do you think that new and used car prices are too high today?
2. Do you feel that many dealers and auto mechanics overcharge on repair-work?
3. Do you know the true TOTAL cost of operating and owning your new car? $17.50 per week if you add in hidden expenses?
4. When you go out to buy a car do you know how to select a reliable dealer?
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INVENTION

Collect for Incoming Calls on Pay Phones

➤ NO LONGER will people be able to use coin-operated telephones in lobbies or railroad stations for receiving telephone calls without paying for the service, if an invention for which a patent was granted this week is put into use. The invention, called "pay station circuits for automatic telephone systems," received patent 2,583,783, and was the work of Clarence E. Lomax, Chicago, and John M. Wild, Ithaca, N. Y. Rights were assigned to the Automatic Electric Laboratories, Inc., Chicago.

The inventors point out that it is the practice of many people to drop a nickel, or a dime, in the slot, to ring the phone of the person they want to speak to. On the other end, the person waits for a prearranged number of rings. If he hears the signal, he then calls the number of the pay station. Thus a pay station phone can be used for incoming calls without the usual monthly charges.

The invention would provide a substation circuit that requires a call registering operation in order to answer incoming calls.

Science News Letter, February 23, 1952

TECHNOLOGY

Surface-Finish Standards To Be Available Soon

➤ AFTER SEVEN years of cooperative work, two automobile manufacturers have jointly announced that a standard for measuring surface finishes has been developed.

Five pure-gold master blocks form a standard set from which duplicate sets can be made. Accurate to one-millionth of an inch, the duplicates will be made available soon. The system was worked out by the Chrysler Corporation and General Motors, Detroit, Mich.

If used properly, the reference blocks will allow mating mechanical parts manufactured by different companies to go together with the same precision as if they had been made by the same machinist.

Science News Letter, February 23, 1952

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NEW MODEL for Chemists, Doctors, Experimenters, Photographers, Dentists, Etc. 0-29" HG Vacuum. Works on 20 pounds up water pressure. Anti-splash head with reversible flow. Screws on Standard water faucet. (adapters for smooth faucets 1.00 additional) Made to last from Zamac & Brass. Has nipple for ¼" hose connection. Dealers solicited. Satisfaction guaranteed on 5 day trial basis. On open acct to institutions, Schools, Colleges and rated firms. Only 1.98 POSTPAID. No COD's please.

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Science News Letter, February 23, 1952

LAMPSHADES of thin wood panels covered on each side with a rigid sheet of plastic combine the warm color and natural beauty of wood with strength and durability of the plastic. Easily cleaned with a damp cloth, these shades are resistant to flame, moisture and warping.

Science News Letter, February 23, 1952

SYNTHETIC CATALYST, cast in the head or piston of the automobile or airplane engine, tends to prevent carbon formation and the destructive impact of knock. It assures a more complete combustion of the fuel within the cylinder and thereby reduces the need for higher octane gasolines.

Science News Letter, February 23, 1952

MOTION PICTURE screen for the movie theater, has side panels on all four sides which are set at an angle and pick up diffused light from the image, eliminating the conventional black surrounding. Increased viewing comfort is provided to patrons and pictures become more realistic.

Science News Letter, February 23, 1952

ELECTROSTATIC DEMONSTRATOR, for school and home use, is a simplified Van de Graaff type 33 inches in overall height that produces a maximum potential of 248,000 volts but a current so low it is harmless to the human body. The hair on the head of a boy with his hand on its spherical top will stand on end as shown in the photograph.

Science News Letter, February 23, 1952

SAFETY GOGGLES for workers handling acids have a frame of bright yellow vinyl plastic, acid resistant and soft enough to mold to fit facial contours, and a one-piece lens of acid-resistant vinyl plastic.

Science News Letter, February 23, 1952

VOLTAGE TESTER, housed in shatterproof plastic and small enough to fit in a pocket, will test AC and DC voltages up to 600 volts and 60 cycles. It has 30-inch rubber leads tipped with steel probes and four-inch fiber grips just back of the tips.

Science News Letter, February 23, 1952

INSECT-KILLING floor wax gives high finish to floors of linoleum, asphalt and rubber tile, cement and wood and kills roaches, ants, waterbugs, silverfish and other household insects that come in contact with it. The insecticide lindane, used in it, is harmless to humans and pets.

Science News Letter, February 23, 1952

Do You Know?

In the absence of modern preservation, much of America's *peach* crop in the early days of the republic was made into brandy.

Each automobile *spark plug* fires about 15,000,000 times in 10,000 miles of driving.

So-called culture *pearls* are produced by oysters into which small beads have been placed by men to stimulate the growing of pearls.

Explosions in *coal mines* are dramatic but they cause only about 21% of the fatalities occurring in the mines.

There is no such thing as truly dry rot in wood; *rot* is caused by fungi and they can not work without moisture.

Two new breeds of meat type *hogs*, developed by the U. S. Department of Agriculture, have a higher proportion of lean to fat than ordinary breeds.

Spring is coming . . .

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